The Role of Empathy in Finding an Effective Intervention to Reduce HIV Related Stigma

by

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ABSTRACT

Human Immunodeficiency Virus (HIV) remains a persistent problem around the world, even though antiretroviral therapy has shown to be effective in reducing viral load and limiting transmission of the virus. Due to HIV's infectious nature, visibility, the populations at risk, and its connections to race, class, and sexuality, it is more stigmatized than any other illness. HIV stigma has been associated with increased depression, social isolation, and poor psychological adjustment. HIV stigma can influence disclosure and care-seeking behavior. Internet-based interventions have shown to be effective in increasing knowledge on STIs and HIV, however, researchers have tested strategies that include educating participants on HIV to reduce stigma and have found that informational approaches alone are not effective. There is evidence that emotional intelligence and empathy are associated with prosocial behavior and influence attitudes towards stigmatized groups. Thus, this thesis aims to test an online intervention using an informational video from the Center for Disease Control and Prevention (CDC) in combination with an empathy-generating component to reduce stigma. It was hypothesized that the online intervention would increase HIV knowledge scores (H1), but stigma will only be reduced in the group introduced to the empathy-inducing component (H2) and those with high emotional intelligence would show the greatest reduction in stigmatizing attitudes (H3). Results did not support these hypotheses, suggesting that the CDC's video does not significantly increase HIV knowledge in the general public. Further, the video intended to generate empathy and reduce stigma was also ineffective. These findings stress the need for further research and questions the effectiveness of empathy-generating interventions (e.g., FACES OF HIV, HIV Justice Network) to

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increase knowledge and reduce stigma. Future researchers should test the effectiveness of

personalized interventions to reduce HIV-related stigma.

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Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) remain a persistent problem for the United States (US) and countries around the world. While great progress has been made in preventing and treating HIV, there is still much to do. In 2015, approximately 40% of the people diagnosed with HIV in the US were individuals ages 13 to 29 (Mimiaga et al., 2018). This is of great concern because youth are less likely to get tested and start treatment in a timely manner (Centers for Disease Control and Prevention - CDC), 2019). More than half of individuals ages 13 to 29 living with HIV were unaware they had the virus and only 43% have received some HIV treatment (CDC, 2020). In addition, youth with HIV have the lowest rate of adherence to treatment because they forget or are not motivated to take medication, experience psychological distress associated with HIV (i.e., depression, anxiety), have financial barriers, low social support, and experience HIV-related stigma (Mulawa, LeGrand, & Hightow-Weidman, 2018).

What is HIV / AIDS

HIV is a virus that attacks CD4 cells, or CD4 T-cells (or "helper" cells that trigger the body's response to pathogens) reducing the ability of the immune system to protect the body from infections (Pham-Kanter, Davidson, Frey, & Finley, 2013). The virus can be transmitted sexually thru a mucous membrane, by sharing needles or syringes, or from mother to child during pregnancy, birth, or breast feeding (Pham-Kanter et al., 2013). The transmission occurs thru exchange of body fluids (i.e., blood, breast milk, seminal, rectal, and vaginal fluids) from a person who has HIV. A typical HIV infection progresses in three stages: the initial acute HIV infection, an asymptomatic clinical stage, and the full-blown AIDS characterized by the collapse of CD4 cells (Pham-Kanter et al., 2013).

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During the acute HIV infection stage, one to four weeks after getting infected, the virus

reproduces at an accelerated rate, rapidly reducing the CD4 cells and spreading

throughout the body (HIV, 2019). This acute period of rapid infection is characterized by

flu-like symptoms such as fever, headache and rash and lasts on average two to four

weeks when the levels of HIV in the blood drop drastically and reach a stable rate, called

the viral set point (HIV, 2019). The period of viral load stability, called Clinical Latency

Stage, is characterized by low levels of viral load, near normal levels of CD4, and lack of

major symptoms. This latent stage on average can last up to ten years (HIV, 2019). As

the infection progresses, the person's count of CD4 cells goes down, the viral load

increases, and symptoms may re-emerge. When the CD4 falls below 200 cells/microliter

of blood with a simultaneous increase in the virus load, stage two has progressed to AIDS

(Pham-Kanter et al., 2013). AIDS is the most severe phase of HIV infection, the immune

system is severely compromised, and the body is at high risk of developing opportunistic

infections (OIs) (Hohman, 2004). OIs are considered AIDS-defining conditions; that is

when a person with HIV presents an OI, they are diagnosed with AIDS. OIs are the major

cause of morbidity and mortality among persons infected with HIV.

Who is at Risk?

HIV can affect anyone regardless of sexual orientation, race, ethnicity, gender, or

age. In 2018, women made up 51% of the population living with HIV worldwide (Ghosn,

Taiwo, Seedat, Autran, & Katlama, 2018). Although in the US, men who have sex with

men make up the majority of the population with HIV (57%, UNAIDS, 2018);

heterosexual women are the most rapidly growing risk group (Pham-Kanter et al., 2013).

It is estimated that nearly 86% of new cases of women with HIV in 2017 contracted the

virus through heterosexual contact (Batchelder, Gonzalez, Palma, Schoenbaum, & Lounsbury, 2015; CDC, 2020; Pham-Kanter et al., 2013). Black women are at the highest risk, 23 times more likely to contract HIV than white women (Pham-Kanter et al., 2013). HIV risk involves complex and dynamic relationships between socio-environmental, interpersonal and intrapersonal factors. HIV in women has been associated with interrelated socio-environmental and interpersonal factors, for example history of intimate partner violence (IPV – i.e., physical, sexual, or psychological abuse perpetrated within an intimate relationship, including forceful physical contact and sexual coercion) (Batchelder et al., 2015). Globally, an association between IPV and HIV has been reported, especially among younger individuals (<25 years old) (Volpe, Hardie, Cerulli, Sommers, Morrison-Beedy, 2013). It is believed that the risk for HIV transmission increases due to trauma to the vagina or rectal mucosa during sexual IPV (Kouyoumdjian Findlay, Schwandt, & Calzavara, 2013; Mitchell et al., 2016). In addition, the risk may also be increased because a victim in an IPV relationship is unable to negotiate condom use with their partner (Batchelder et al., 2015; Kouyoumdjian et al., 2013; Mitchell et al., 2016). The risks of contracting HIV may also be higher among victims of IPV from a heightened level of stress that leads to a compromised immune system, leaving them more susceptible to the HIV infection and increased progression of the infection (Kouyoumdjian et al., 2013; Mitchell et al., 2016). But HIV can also be antecedent in the IPV relationship between IPV. For example, IPV could occur as a consequence of HIV disclosure or as part of the sexual IPV to purposely expose the victim to HIV (Kouyoumdjian et al., 2013; Mitchell et al., 2016); as a part of an escalating pattern of violence (Mitchell et al., 2016). Evidence from diverse populations of women has shown

that IPV victimization is associated with risky sexual behaviors including low contraceptive and condom use and adverse sexual and reproductive health outcomes (e.g., pelvic pain, menstrual abnormalities, sexually transmitted disease (STD) , unwanted pregnancy, and multiple abortions), while IPV perpetration has been associated with sexual infidelity, multiple sexual partners, and unprotected anal sexual intercourse (Raj, Santana, La Marche, Amaro, Cranston, & Silverman, 2006). This is of great importance because rates of IPV and HIV increase for women in late adolescence and early adulthood, as well as women with lower income and lower levels of education (Mitchell et al., 2016; Thompson et al., 2006).

In 2017, 8164 people aged 13–24 were diagnosed with HIV, representing 21% of newly diagnosed cases, almost 80% of these new cases were aged 20–24 (CDC, 2019). Young people are at increased risk for HIV due to the many developmental, psychological, and social circumstances that come together in this period of the lifespan. Particular HIV risk behaviors within this age group include sexual experimentation and drug abuse, risk behaviors often influenced by strong peer group relationships. Compounding this vulnerability is "generational forgetting": that is the fact that today's youth may be less likely to perceive the dangers associated with HIV than are older Americans, who witnessed a higher AIDS mortality rate associated with the rapid progression from HIV to AIDS in the early years of the epidestamic (NIDA, 2012). In addition, adolescents and young adults, highly concerned with fitting in, may be also particularly sensitive and vulnerable to being stigmatized. Toska et al (Toska, Cluver, Hodes, & Kidia, 2015) found that HIV-positive adolescents feared rejection, stigma and public exposure if disclosing to sexual and romantic partners. Although adolescents who

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had knowledge of their own status were four times more likely to engage in safe sex practices, disclosing their status or knowing their partner's status was not significantly associated with safer sex practices (i.e., abstinence or condom use) (Toska et al., 2015). These findings suggest that knowledge of the risk and disclosure without the abilities to negotiate safer safe does not lead adolescents to safer practices in sexual and romantic relationships, condom use was still inconsistent and subject to difficult negotiations (Toska et al., 2015). There is a paucity of research looking at the challenges that young people face in learning about their status, in disclosing their status to sexual and romantic partners, and in negotiating safe sex. Attitudes and behavior that devalue individuals based upon their HIV status (HIV-related stigma) create barriers to HIV prevention, treatment, and wellbeing among those at risk. It is of utmost importance to empower adolescents, both HIV-positive and negative, with the information, and most importantly the skills to reduce their HIV risk, and maintain their health (CDC, 2019).

How is HIV Treated

There is currently no cure for HIV; however, treatment with antiretroviral therapy (ART) slows down the virus and prevents it from progressing to AIDS (Mimiaga et al., 2018). When taken correctly, ART can reduce the viral load to undetectable levels; that is the virus can no longer be detected in blood tests and the virus cannot be transmitted (HIV.gov, 2019). Although, individuals with undetectable virus are still considered HIV-positive, they are not at risk of transmitting it to offspring, sexual partners, or needle-sharing partners. ART is successful and influential in improving quality of life for people living with HIV. In the 1980s, when the HIV epidemic first began, those who contracted it were virtually certain to progress to AIDS, destroying their immune system, and dying

from an OI; most commonly pneumonia (Pham-kanter et al., 2013). Regardless of the medical advances since the 1980s in regard to treatment, the fear surrounding HIV remains. Stigma can be a response to fear and can influence people to believe misconceptions about HIV and about the behavior of people living with HIV (Ogden & Nyblade, 2005). For example, people still wrongly believe that HIV can be transmitted through kissing or touching, or that it is a consequence of irresponsible behavior and is a deserved punishment (Ogden & Nyblade, 2005).

HIV Stigma

Research has shown that there is more stigma surrounding HIV than there is surrounding any other illness (Crawford, 1996; Peters et al., 1994; Mak et al 2006). In a study of public stigma towards three types of infectious diseases— HIV/AIDS, severe acute respiratory syndrome (SARS), and tuberculosis (TB), Mak et al (2006) found that individuals with HIV/AIDS were the most harshly and blatantly stigmatized by the general public and were considered more responsible for their disease than individuals with SARS and TB. While stigma, as a concept, can be traced back to the 17th century, it began attracting attention in research in the 1960's, when Goffman first defined it as "an attribute that is significantly discrediting" (Parker & Aggleton, 2003; Stangl et al., 2013). Since then, researchers have refined and elaborated on Goffman's original conceptual framework. Stigmatization has also been conceptualized as a social process used to achieve power and control, in which groups devalued because of differences or deviations from "the norm" are subjected to exploitation, dis-empowerment and/or exclusion (Airhihenbuwa, Ford, & Iwelunmor, 2014; Ogden & Nyblade, 2005; Parker & Aggelton, 2003; Stangl et al., 2013). Stigma is not limited to health conditions, but can

also be based on class, race, gender, and sexuality (Parker & Aggleton, 2003; Stangl et al., 2013). HIV-AIDS patients are highly stigmatized due to HIV's infectious nature, visibility, the populations perceived as at risk, and its connections to race, class, and sexuality (Herek, 1999; Stangl et al., 2013). For example, HIV-AIDS is perceived as a direct result of irresponsible behavior, as it is commonly transmitted through voluntary and often "immoral" behaviors such as intravenous drug use or unsafe sex (Herek, 1999; Ogden & Nyblade, 2005). Despite the efforts to dispel the myth that HIV is transmitted thru casual contact, fears persist. Further, regardless of the advances in treatment, the perception of HIV as incurable, and fatal condition also persists (Herek, 1999; Ogden & Nyblade, 2005). In addition, conditions characterized by salient symptoms, such as those in the symptomatic stages of AIDS, tend to be more stigmatized (Herek, 1999). All these characteristics of HIV are associated with fear, resulting in stigma, avoidance and segregation of HIV-positive individuals and their closed-ones (Herek, 1999; Ogden & Nyblade, 2005; Stangl et al., 2013). This stigma has a particularly negative impact in people's decisions regarding whether and when to be tested for the virus (Brent, 2016; Chesney and Smith, 1999; English, Rendina, & Parsons, 2018; Stangl et al., 2013), particularly among the young (CDC, 2019). In addition, fear of stigma also impacts care-seeking behavior of HIV-positive individuals; preventing them to disclose their status to receive timely treatment (Brent, 2016; English et al., 2018: Stangl et al., 2013). Failing to disclose HIV-positive status increases the risk of engaging in unsafe sexual practices putting HIV-negative individuals at risk (Wenger et al., 1994). In turn, the choice to not disclose their HIV status increases the sense of isolation and psychological distress among HIV-positive individuals (Crandall and Coleman, 1992).

Stigma Classification

HIV and AIDS-related stigma can be experienced in different forms and settings including perceived, enacted, and self-stigma (Sengupta, Banks, Jonas, Miles, & Smith, 2011). Perceived stigma (i.e., how much HIV-infected persons believe that the public stigmatizes someone with HIV) has been associated with various reasons against disclosing, including fear of rejection, communication difficulties and a desire to protect the other person (Brent, 2016; Sengupta et al., 2011); while enacted stigma is more insidious because includes discriminating behaviors such as refusing services to someone who has HIV (Brent, 2016; Rueda et al., 2016; Sengupta et al., 2011). Furthermore, stigmatized individuals with HIV/AIDS are likely to accept and internalize the widespread stereotypes associated with their illness and experience self-stigmatization. Self-stigma results in social isolation, feelings of shame, and fear of enacted stigma (Rueda et al., 2016; Sengupta et al., 2011). An example of internalized stigma would be avoiding developing romantic relationships due to fear of rejection once HIV status is disclosed (Sengupta et al., 2011). In addition, HIV-related stigma is often heightened by "layers" of other stigmas associated with factors such as homosexuality, drug use, and sexual promiscuity (Brent, 2016; Crawford, 1996; Novick, 1997). There is research showing that people living with AIDS who were infected through sharing needles or through sex with multiple partners experience more stigma and discrimination than people living with AIDS who were infected through sex with one partner (Herek and Capitanio, 1998; Molero, Fuster, Jetten, & Moriano, 2011). Further, when a person with HIV-AIDS was described as having contracted HIV through sex, homosexual and bisexual men were viewed more negatively than heterosexual women and men (Herek,

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2002; Molero et al., 2011). The compound impact of these multiple layers of stigmatization on the mental and physical health of seropositive individuals already marginalized can be devastating for their well-being and the well-being of their community (Fuster-Ruizdeapodaca et al., 2014).

The Impact of Stigma

HIV stigma has been associated with increased depression, social isolation, and poor psychological adjustment to HIV (English et al., 2018; Ghosn, Taiwo, Seedat, Autran, & Katlama, 2018; Rueda et al., 2016). It has also been associated with negative mental health outcomes, not only for individuals living with HIV, but also for their loved ones (Brent, 2016; Wei, Li, Harrison, Zhao, and Zhao, 2016). Studies on the impact of HIV stigma have shown that it harms both HIV-positive and HIV-negative individuals. Wei et al. (2016) found that children of people living with HIV also experience stigma that directly impacts their emotional status; both enacted ($\beta = .26, p < .01$) and perceived ($\beta = .36, p < .01$) stigma were significantly associated with negative emotions. The impact of HIV-stigma, including both enacted (indirect effect $= .032$, 95% CI [0.01, 0.05]) and perceived stigma (indirect effect $= .05$, 95% CI [0.02, 0.08]), on negative emotions is partially mediated by emotion regulation abilities (Wei Wei et al 2016). These findings suggest that emotional regulation may be an effective buffer to reduce the negative effects of HIV stigma and may help patients and their love-ones to become more resilient (English et al., 2018; Wei Wei et al 2016). That is healthy emotion regulation strategies can aid in reducing negative emotion and may result in reduced stigma responses (Peters et al., 2004).

How to Change Stigma

Emotional intelligence (EI) has been defined as a set of skills that contribute to the accurate appraisal and expression of emotion in oneself and in others, the effective regulation of emotion in self and others, and the use of feelings to motivate, plan, and achieve in one's life (Salovey and Mayer, 1990). Further, EI is part of a hierarchy of mental skills that is concerned with the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought (Mayer, Roberts, & Barsade, 2008). Armstrong (2015) found a negative correlation between EI and mental illness stigma ($r = -.514$), such that individuals who scored highly on EI had a decreased likelihood of stigmatizing mental illness. Further, they found that familiarity with mental illness was associated with EI and less mental illness stigma; more familiarity and higher levels of EI are associated with decreased stigmatization of mental illness ($p = .007$). Given this association, it is possible that EI may also have an impact on HIV stigma.

Similarly, there is evidence that empathy is a key element in emotional processing (Carré, Stefaniak, D'Ambrosio, Bensalah, & Besche-Richard, 2013). Empathy has been described as a multidimensional concept with a cognitive component: identifying with the emotions of others, and an affective component: sharing the emotions of others (Silke et al., 2017). Empathy has been associated with prosocial behavior and has been shown to impact on attitudes and behaviors that individuals express towards stigmatized groups (Abrams, Van de Vyver, Pelletier, & Cameron, 2015; Silke, Swords, & Heary, 2017). The effect of empathy on prosocial behavior has been shown across age groups (Abrams et al.,2015; Silke et al., 2017; Webb et al., 2016). Silke et al. (2017) found that in a

population of adolescents, those with higher levels of apparent and cognitive empathy

expressed significantly less explicit stigmatizing responses. Webb et al. (2016) found a

similar effect in college students, individuals who scored high on empathy were less

likely to have stigmatizing attitudes toward those suffering from mental illnesses (β = -

.195, p < .05). This evidence suggests that increasing empathy may be added as a tool to

reduce HIV stigma.

Changing HIV Stigma: Interventions

Bronfenbrenner proposes that a person's development is affected by everything in

their surrounding environment; his framework of ecological system emphasizes the

bidirectional influences between individuals' characteristics and the different

environmental contexts surrounding them (Bronfenbrenner, 1977). In public health, the

Bronfenbrenner ecological systems theory has been used to categorized intervention

research aimed at reducing social stigma and its consequences on individuals' health into

three contexts or levels: intrapersonal, interpersonal, and structural (Cook et al., 2014).

The intrapersonal level includes interventions targeting individuals who belong to a

stigmatized group to reduce internalized stigma, for example, individuals with HIV, or

interventions to change attitudes of individuals toward the stigmatized group (Cook et al.,

2014). Since stigma is driven by fear and has been associated with misinformation about

transmission, one of the most common strategies to combat it at the interpersonal level

has aimed at fear reduction through educational and informational approaches (Frye et

al., 2017; Parker & Aggleton, 2003). Skill building and counseling approaches have also

been used to treat stigma at the intrapersonal level, focusing on reducing internalized

stigma within people living with HIV. These individualistic approaches are beneficial

because they allow researchers to identify the impact of stigma on psychological well-being of individuals and address it directly (Airhihenbuwa et al., 2014).

The interpersonal level aims to reduce stigma within a dyad or a small group even when they are not within the stigmatized group, for example, community members and family members of individuals with HIV (Cook et al., 2014). Since individuals are impacted by their social environment, it is essential to also implement interpersonal level interventions to reduce stigma at the community level (Airhihenbuwa et al., 2014; Birbeck et al., 2019; Frye et al., 2017). Informational approaches have been implemented at the institutional level, for example work and health care settings, and the local community to reduce perceived and enacted stigma. Critics have argued that knowledge alone has not necessarily led to a decrease in the levels of stigma (Feyissa et al., 2018; Joint United Nations Programme on HIV/AIDS, 2012). There is evidence showing that interventions to reduce stigma are more effective when multi-level approaches are used in combination (Frye et al., 2017; Richter, Phillips, McInnis, & Rice, 2012). Frye et al. (2017) conducted a multi-component, community-level intervention, to reduce HIV stigma and homophobia in Ney York City. Community advocates implemented a "space-based" intervention combining an information and education campaign on HIV with interaction with the LGBTQ+ community and individuals with HIV, with the goal to increase empathy with "Walk in Our Shoes" event and encouraging community members to take the perspective of someone with HIV (Frye et al., 2017). They hypothesized that the intervention would reduce HIV stigma and homophobia within the community, and stigma reduction would be accompanied by a reduction of barriers to HIV prevention and treatment services. The evaluation of the intervention was conducted through street

surveys, which asked residents about their attitudes toward gay and lesbian people or people living with HIV/AIDS. They found that the intervention (i.e., contact with the LGBTQ+ community and individuals with HIV, and education on HIV) was associated with higher likelihood of getting tested for HIV. Although they did not find reduction of the social stigma in the community surveys, they did identify a significant increase in HIV testing that was maintained for six months after the intervention. Thus, the intervention resulted in an increase in HIV treatment and prevention but did not decrease reports of HIV stigma and homophobia (Frye et al., 2017).

Finally, interventions at the structural level aim to reduce stigma by changing the social conditions that allow stigma to go on. Structural changes may include interventions that target the socio-political environment, such as individuals or groups driving policy at the school, city, state or national levels. These interventions may aim at reducing barriers to access education, healthcare, and housing, or to promote diversity and institutional fairness.

Online videos are a great way to convey information — provided the user can (and wants to) see and hear the content. Users should know what the video is about before being asked to commit to it. The name or title of the video should be descriptive and concise and should be accompanied by relevant information about the topic and the length of the video. In the realm of video content, even a few seconds can feel "lengthy" to a user. Videos not only need to be as short as possible, but also effectively concise. Cutting content, writing more succinct scripts, or editing with a critical eye may be the solution. Provide context around video content to make the most of the video by eliminating unnecessary introductions and by tightly editing content to keep viewers

engaged and informed. Usability testing was conducted to gain insight on the relative value of the videos, to understand the users experience and whether or not the video satisfied their expectations.

There is evidence that technology-based sex education is effective (Howard et al., 2011; Widman, Nesi, Kamke, Choukas-Bradley, and Stewart, 2018; Villegas et al., 2015). In a study by Howard, Davis, and Mitchell (2011), researchers introduced an internet-based sex education intervention at a teen clinic and found that teens who received the intervention, engaged in significantly more safe sex practices at the 3 to 6-month follow up than the group that did not undergo the intervention. Similarly, an Internet-Based STD and HIV Prevention Intervention (I-STIPI) was tested on young adult women and showed improvements in STD and HIV knowledge, attitudes toward condom use, perceived self-efficacy, and reduced self-reported risky sexual behaviors (Villegas et al., 2015). Some argued the privacy is a benefit of online interventions, as it allows the participant to be more comfortable and honest in studies regarding sexual behaviors (Döring, 2009).

Interventions to reduce HIV stigma have encountered methodological challenges (Brown, Macintyre, & Trujillo, 2003; Feyissa, Lockwood, Woldie, & Munn, 2018; Rao, Elshafei, Nguyen, Hatzenbuehler, Frey, & Go, 2019; Sengupta et al., 2011; Stangl et al., 2013). In 2011, Sengupta et al. (2011) conducted a systematic review of HIV-stigma related interventions. Their findings were discouraging: only two of 14 studies identified were conducted following rigorous scientific standards. By 2018, the quality of stigma-related interventions have not improved significantly (Feyissa et al., 2018), Feyissa et al.

(2018), urged investigators to move toward validation and standardization of much needed stigma-related interventions as well as stigma related measures.

Based on this evidence, the current study was designed to test the effectiveness of an online video-based intervention to increase knowledge on HIV and empathy among a general population sample of young adults.

The Current Study

This thesis will focus on an Interpersonal intervention. Since the evidence suggests that HIV prevention programs using multiple community-based approaches and directly addressing layered stigmas may have a greater impact (Frye et al., 2017), I will test the impact of an information-based intervention with an emotional-based component on reports of HIV stigma. We hypothesize that:

Hypothesis 1 (H1): educating adults on HIV using an internet-based approach will increase their knowledge on the virus but will not result in a significant decrease in HIV stigma.

Hypothesis 2. (H2): the addition of the emotional empathy generating component will result in a significant increase in knowledge and decrease in stigma.

Hypothesis 3. (H3): participants with high scores on emotional intelligence randomized to the empathy inducing condition will show the greatest reduction is stigmatizing attitudes.

<div align="center">Methods</div>

Research Design

To test these hypotheses, the study used a mixed factor randomized design with three groups. Group 1 was exposed to a control video, group 2 was exposed to an HIV

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informational video, and group 3 was exposed to both the informational and an empathy inducing video.

Measures

HIV stigma was measured using the HIV Stigma Scale (Genberg, Hlavka, Konda, Maman, Chariyalertsak, Chingono, . . . Celentano, 2009). The 19-item questionnaire measures three components of HIV and AIDS related stigma: negative attitudes, perceived discrimination, and equity, and has shown good internal consistency (Cronbach's alpha = .82 and .93 in this sample) (Genberg et al., 2009). The negative attitudes subscale includes items such as, "People living with HIV/AIDS should be ashamed". The perceived discrimination subscale includes items such as, "People living with HIV/AIDS in this community face rejection from peers". The equity subscale includes items such as, "People with HIV/AIDS should be treated the same as everybody else". Answers are recorded on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Score were calculated by taking the mean of each answer. Items that indicate positive attitudes of individuals with HIV were reverse coded. Higher scores indicate higher stigmatizing attitudes.

HIV Knowledge was measured using the HIV Knowledge Questionnaire (Carey, Morrison-Beedy & Johnson, 1997). The questionnaire is widely used includes 45 items testing general knowledge on HIV, how it is transmitted, prevention, and what treatment is available (Janulis et al., 2018). The questionnaire has shown test-retest reliability and strong internal consistency (Cronbach's alpha = .91 and .86 in this sample) (Carey et al., 1997; Janulis et al., 2018). Answers are coded as '1' for correct answers and '0' for

incorrect answers. A score was calculated as the sum of the total correct answers (range 0-45). Higher scores indicate better HIV knowledge.

The Trait Emotional Intelligence Questionnaire Short form (TEIQue-SF) measured emotional intelligence (Snowden, Watson, Stenhouse, & Hale, 2015). The questionnaire includes 30 items to measure well-being, self-control, emotionality and sociability, has been validated across multiple populations (Snowden et al., 2015), and has shown high reliability (Cronbach's alpha = .88 and .94 in this sample) (Cooper & Petrides, 2010; Siegling, Vesely, Petrides, & Saklofske, 2015). Answers are recorded on a 7-point Likert scale from 1 (*completely disagree*) to 7 (*completely agree*) (Snowden et al., 2015). A global score is calculated by taking the mean of all answers. Items that indicate poor emotional intelligence, such as, "I usually find it difficult to regulate my emotions" were reverse coded. Higher scores indicate higher emotional intelligence (range 1-7).

The Basic Empathy Scale in Adults (BES-A) is an accepted and commonly used 20-item standardized questionnaire that measures empathy in adults (Carré et al., 2013). The questionnaire has been deemed appropriate as a two-factor structure (cognitive and affective processes) and as a three-factor structure (emotional contagion, emotional disconnection, and cognitive empathy) and has shown to have high reliability (Cronbach's alpha = .79 and .91 in this sample) (Carré et al., 2013; Jolliffe & Farrington, 2006). The cognitive empathy subscale includes 9 items such as "I can understand my friend's happiness with she/he does well at something", and the affective empathy includes 11 items such as "After being with a friend who is sad about something, I

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usually feel sad" and responses are measured on a 5-point Likert scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*) (Carré et al., 2013).

The Social Desirability Scale is a reliable (Cronbach's alpha = .88 and .69 in this sample) and validated 33-item questionnaire that measures social desirability to see how this may influence self-reported measures (Crowne & Marlowe, 1960; Reynolds, 1982). Answers are recorded as either true or false (Crowne & Marlowe, 1960). For positive items such as "I never hesitate to go out of my way to help someone", the answer "True" was coded as '1' and the answer "False" was coded as '2'. For negative items, answers were reverse coded. An overall score of social desirability was calculated adding all items; higher scores indicate higher social desirability. Copies of all questionnaires used are included in Appendix A.

Power Analysis

A power analysis was conducted using the software package, GPower (Faul and Erdfelder 1992). Using the Cohen's d (Cohen's d = .25) reported in the meta-analysis by Mak et al. (2017) observed effect size and alpha level of p < .05, powered at .80 for the detection of moderate to large effect size.

Participants

Participants were recruited via Amazon's Mechanical Turk and were paid $2.00 for completing the study. The mean age was 33.3 years old (range 20 – 71). Participants were excluded from the study if they could not speak English. Two attention check items were included in the survey, for example "please select strongly agree"; 67 participants failed the attention checks and were excluded from the analyses, for a total sample of 378.

Procedure

        Participants were informed of the voluntary nature of their participation and the potential risks and benefits of the study, and gave passive consent by proceeding to complete the study. After consenting they were randomly assigned to one of the three groups. Participants then completed a survey including a demographic questionnaire, the HIV Stigma Scale, the brief HIV Knowledge Questionnaire, the Trait Emotional Intelligence Questionnaire Short Form (TEIQue-SF), the Basic Empathy Scale in Adults (BES-A), and the Social Desirability Scale. Then each participant was exposed to their group intervention.

        Group 1 was shown a video providing detailed information on the biological processes of the HIV and AIDS, specifically, how HIV replicates in the body (Osmosis, 2016). Although the video gives information on HIV, it does not answer the questions included in the HIV Knowledge questionnaire.

        Group 2 was exposed to a video produced by the CDC (HIV/AIDS 101 6:57 min). According to the CDC this video is designed "to convey the most important messages that everyone needs to know about HIV and prevention" (CDC, 2012). It includes most of the key HIV information: what HIV is, transmission, prevention, and treatment. The video was embedded in a narrated PowerPoint presentation that included the all the necessary information to correctly answer the HIV knowledge questionnaire.

        Group 3 was exposed to the same video shown to Group 2 plus an empathy generating emotional video-component. The empathy component included two videos: one video from the FACES OF HIV series on YouTube (wemakethechange, 2012) of a woman's experience after contracting HIV from her husband; the second video included

portions of Sean Strub film HIV Is Not a Crime (2012) downloaded from the HIV Justice Network discussing the criminalization of individuals who test positive for HIV.

After each video was presented, participants were asked to complete a usability questionnaire to determine if participants found the video helpful, easy to understand, and relevant to the topic of the study. After the intervention, participants again completed the HIV knowledge, and the stigma questionnaires.

Data Analyses

Student's t-test was used to compared groups on specific characteristics including sex, age, race, educational background, drug use, HIV testing and diagnosis. Two-way repeated-measures analysis of variance (ANOVA) was used to test for statistically significant differences, and the factors were intervention group. If significant interaction was found, paired t-test was performed to compare the outcome indicators before and after the intervention. Data were analyzed using SPSS Ver. 17.0 for Windows (SPSS, Chicago, IL, USA). The level of statistical significance was set at 0.05. A hierarchical linear regression analysis was used to evaluate whether emotional intelligence predicts the relationship between knowledge and post-intervention stigma within each group controlling for various socio-demographic and psychological variables.

<center>Results</center>

Sample Characteristics

Three hundred and seventy-eight participants completed the study online via Amazon Mechanical Turk (MTurk). As shown in Table 1, the sample was composed of highly educated males (238 - 63.1%), about two-thirds had (242 - 64.2%) a Bachelor's

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degree, and 78 (20.6%) had a Master's, a Doctoral or other professional degree. Of the 15% with less than college degree: 4.8% had a high school diploma, 5.6% some college, and 4.8% an Associate's degree. Most participants (269 -71.4%) reported being heterosexual, 16 (4.2%) homosexual, and 91 (24.0%) bisexual. A small percentage of participants (7.4%) resided outside the United States.

The majority of the participants received some form of sex education from their parents (63.1%) and school (72.3%). Only 7.7% reported not receiving any form of sex education in school. Despite receiving formal sex education, less than half (44.3%) learned about condom use and only a fourth (24.5%) learned about dental dams, birth control, or any other type of female contraceptives. Further, only about a fourth (26.9%) received information about STDs and how they are spread, treated, and detected, and even less (15.3%) received any information about non-heterosexual intercourse or intercourse involving individuals who are not cis-identifying or gender conforming.

The majority of participants (89.4%) reported being sexually active currently. Of those sexually active , 93.8% know their partner's HIV status, 63.3% have been tested for HIV at least once, and 62.3% reported to be likely to get HIV tested in the next 6 months. Yet, less than half (48.3%) report using protection against STDs.

Overall, participants answered an average of 23.53 (52.3%) items from the HIV Knowledge Questionnaire correctly at baseline. The average number of correct questions for the three topic areas were 4.75 (47.50%) for general knowledge, 10.89 (54.45%) for questions about transmission, and 7.89 (52.6%) for questions regarding treatment and prevention. For example, 54.4% of participants answered the prevention item "Washing one's genitals after sex keeps a person from getting HIV" correctly. Regarding general

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knowledge,   for example, 43.8% of participants answered the item "HIV and AIDS are the same thing" correctly. Lastly, 59.9% answered the item regarding transmission "A person can get HIV from a toilet seat" correctly.

An independent-samples t-test (See Table 2) showed that compared to females, male participants scored significantly lower on HIV knowledge ($p < .001$) and significantly higher on HIV stigma at baseline ($p = .002$).

Contrary to expectations, participants with more education (Bachelor's and higher degrees) scored significantly lower on HIV knowledge at baseline than participants with only a high school diploma and those with some college ($p < .001$). For example, 37.8% of participants with a bachelor's degree or more answered the item "HIV and AIDS are the same thing" correctly, compared to 77.2% of participants with less than a bachelor's degree (Table 3). Similar differences were observed regarding stigma, participants with more education (Bachelor's and higher degrees) scored significantly higher on stigma at baseline than those with less education (Table 3). But, the difference was significant when those with Bachelor's were compared to those with only a high school diploma ($p < .001$), participants with some college ($p < .001$), and those with Associate's degrees ($p = .001$) (Table 3).

There was no significant difference of HIV knowledge, ($p = .14$), between participants who identified as heterosexual and those who identified as homosexual. However, individuals who identified as bisexual performed significantly worse on HIV knowledge at baseline than heterosexual individuals ($p < .001$), and scored significantly higher on stigma at baseline than heterosexual individuals ($p < .001$) (Table 3).

Main Effects and Interactions

Two-way ANOVA revealed significant main effect on HIV knowledge, F (1, 375) = 3.85, p = .05, η 2 = .01, in HIV knowledge test: pre-intervention vs. post-intervention (See Table 4 and Tables B1-B4 in Appendix B) showing that compared to scores before the intervention, all groups performed significantly better on the HIV knowledge questionnaire after the intervention, (M = 23.53, SD = 8.31 vs. M = 24.06, SD = 8.98). However, there was no main effect of intervention group (between analysis), F (2, 375) = 1.001, p = .37, η 2 = .005, showing that the video lectures shown did not have an impact in the participants HIV knowledge scores. In addition, there was no significant interaction effects, F (2, 375) = 1.50, p = .22, η 2 = .008, indicating that knowledge scores before and after intervention did not differ across groups. After including age as a covariate, the main effect of knowledge test was no longer significant, F (1, 375) = 1.82, p = .19, η 2 = .005, suggesting age has an influence on HIV knowledge scores. Further, there remained no significant effect of group and no interaction (Table 4). Therefore Hypothesis 1 (H1) is rejected. A two-way ANOVA testing the impact of the intervention on HIV Stigma revealed also a significant main effect in the opposite direction expected , F (1, 375) = 4.83, p = .03, η 2 = .01, that is compared to scores before the intervention all three groups scored significantly higher on stigma after the intervention, (M = 2.88, SD = 0.90 vs. M = 2.92, SD = 0.84) There was no main effect of intervention group, F (2, 374) = 1.09, p = .34, η 2 = .01, that is no group perform significantly different on stigma scores. There was no significant interaction, F (2, 375) = 1.50, p = .22, η 2 = .01, indicating that stigma scores before and after intervention did not differ across groups.

Therefore Hypothesis 2 (H2): the emotional empathy generating component will result in a significant increase in knowledge and decrease in stigma is also rejected.

After including age and social desirability as a covariate, the main effect of stigma test was no longer significant, $F(1, 373) = 2.66$, $p = .10$, $\eta 2 = .007$, suggesting that stigma scores were possibly influenced by social desirability and age. Further, there remained no significant effect of group, $F(1, 373) = 0.82$, $p = .44$, $\eta 2 = .004$, and no interaction, $F(2, 373) = 1.45$, $p = .24$, $\eta 2 = .008$ (Table 4).

Associations with Stigma

Univariate linear regressions were conducted to test the third hypothesis and asses the relationship between emotional intelligence, as well as other important predictor variables, with post-intervention stigma. Contrary to expectations, emotional intelligence was positively associated with stigma, $\beta = 0.67$, $p < .001$, suggesting that higher emotional intelligence scores predict higher stigma scores. As expected, being heterosexual (sexual orientation) was associated with lower stigma ($p < .001$). Additionally, gender, education level, stigma pre-intervention, and religious service attendance were also positively associated with stigma (all $p < .01$); age and social desirability were negatively associated with stigma ($p < .001$) (Table 5).

The variables were then entered in a hierarchical regression in five blocks: demographic variables, socio-emotional variables, residence/geography, sexual practices, and HIV-related variables last, to determine the contribution of each predictor while also controlling for the effect of the other variables. All demographic variables were entered in step 1: including intervention group, age, education level (coded 1 for at least a Bachelor's degree and 0 for less than a Bachelor's degree), gender (coded 1 for male and

0 for female), and race (coded 1 for white and 0 for others); then emotional intelligence, religious service attendance, and social desirability were entered at step 2; place of residence was entered at step 3 (U.S. vs. non- U.S. residence and Southern residency vs non-Southern residency); condom use and sexual orientation (coded 1 for heterosexual and 0 for non-heterosexual) were entered at step 4; and lastly, history of HIV testing, HIV knowledge, and stigma at baseline were entered for the final step (step 5).

In the first step of the hierarchical regression, education level, age, and race were significantly associated with stigma ($p < .01$), but gender and group were not. At step 2, controlling for group, education, age, race, and gender, emotional intelligence was significantly associated with stigma ($p < .001$), but religious service attendance and social desirability were not. At step 3, controlling for group, education, age, race, and gender, emotional intelligence, religious service attendance, and social desirability, both condom use and sexual orientation were significantly associated with stigma. At step 4, controlling for group, education, age, race, and gender, emotional intelligence, religious service attendance, social desirability, condom use, and sexual orientation, HIV knowledge was significantly associated with stigma ($p < .01$). At the last step, controlling for group, education, age, race, and gender, emotional intelligence, religious service attendance, and social desirability, condom use, sexual orientation, and HIV Knowledge, stigma at base line was significantly associated with stigma. Overall, in the final step, having at least a bachelor's degree, emotional intelligence, and baseline stigma were significant predictors of stigma ($p < .05$). Since there was no reduction in stigma scores, and emotional intelligence was positively associated with stigma, Hypothesis 3 (H3) is rejected.

Usability

Usability testing was conducted to gain insight on the relative value of the CDC video. This video was evaluated by 259 participants, most of whom agreed that the content of the video was accurate and up-to-date (79.05%); useful (76.10%) and bias-free (71.10%). The information stimulated their interest (65.05%); promoted understanding (72.35%) and can be applied to their life (64.15%). It encouraged them to reflect about HIV risks and unintended consequences (69.20%) and brought remote experiences and places to their attention (64.35%). They agreed that the video was well planned, organized, and structured (71.45%); with the appropriate focus (68.10%). They also found that the information was provided in the appropriate context (69.65%); and the quality and speed was appropriate (61.80%). Finally, two-thirds agreed that they learned something new about HIV (63.75%), but only 57.2% would recommend their friends to watch it. (Table 6).

Ratings for the empathy inducing video were very similar. The empathy video was evaluated by 126 participants, most of whom agreed that the content of the video was accurate and up-to-date (79.40%); useful (72.30%) and bias-free (76.00%). The information stimulated their interest (66.70%); promoted understanding (66.9%) and can be applied to their life (66.10%). It encouraged them to reflect about HIV risks and unintended consequences (70.70%) and brought remote experiences and places to their attention (67.20%). They agreed that the video was well planned, organized, and structured (70.40%); with the appropriate focus (71.70%). They also found that the information was provided in the appropriate context (67.20%); and the quality and speed

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was appropriate (64.30%). Finally, two-thirds agreed that they learned something new about HIV stigma (67.70%), but only 61.90% would recommend their friends to watch it.

Discussion

In this study, the effect of an online-based intervention was tested on participants' HIV knowledge and HIV-related stigma. I used an informational video from the CDC (CDC, 2012), assuming its efficacy was tested; however, no information regarding its efficacy was posted and the video was removed from the CDC website this year. The empathy-generating component to reduce stigma made use of videos produced for online educational campaigns including the FACES OF HIV and the HIV Justice Network. I hypothesized that the online intervention would increase HIV knowledge scores (H1), but stigma will only be reduced in the group introduced to the empathy-inducing component (H2) and those with high emotional intelligence would show the greatest reduction in stigmatizing attitudes (H3). The results from the randomized intervention did not support these hypotheses, suggesting that the CDC's video does not significantly increase HIV knowledge in the general public. Further, the video intended to generate empathy and reduce stigma was also ineffective.

Online-based interventions to educate and promote sexual health have been shown to be more cost-effective and more successful than in-person interventions (Widman et al., 2018). At baseline, participants on average answered 23.53 items out of 45 from the HIV knowledge questionnaire correct (52.3%). Specifically, participants scored the lowest (47.5%) on items regarding general HIV knowledge and performed nearly the same on HIV prevention (52.6%) and treatment (54.5%). The results show that participants scored higher on the HIV Knowledge Questionnaire after the intervention,

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possible due to a testing effect; but there was no interaction effect. These findings suggest that the participants that watched the CDC informational video performed no better than the participants in the control group who watched the video on the replication process of HIV. However, after age was included as a covariate, the main effect of score was no longer significant, suggesting that age played a role in knowledge scores. These results lead me to conclude that the CDC informational video does not improve HIV knowledge in this population. Since there was no significant increase in knowledge, the first hypothesis was rejected.

The results also showed that our attempt to induce empathy did not lead to a reduction in stigma. Instead, our results showed an increase in stigma, although, stigma scores did not differ across groups, suggesting that the increase in stigma might have been also product of a testing effect. Interestingly, 72.2% of the participants' agreed that "The content was generally useful", and 61.9% would recommend the video to a friend. Since the majority of participants reported a positive experience with the empathy-inducing videos, the failure to induce empathy does not seem the result of lack of understanding or interest in the video's content. Similar to the failure of the CDC informational video to improve knowledge, the empathy-inducing video failed to reduce stigma. These findings stress the need for further research and question the effectiveness of empathy-generating interventions (e.g., FACES OF HIV, A POSITIVE FACE, HIV Justice Network, Center for HIV Policy Law) to increase knowledge and reduce stigma. An alternative possible approach to reduce stigma is the use of personalized interventions for specific populations that may include an interactive component that provides participants the opportunity to ask questions (Ashton, Gordon, & Reeves, 2018).

Contrary to the results found by Armstrong (2015) that emotional intelligence was associated with significantly less mental health stigma, the results of this study suggest that emotional intelligence is associated with significantly higher HIV stigma. These findings do not provide evidence for my third hypothesis; however, it is important to note that, in this study, emotional intelligence was measured as a trait rather than a skill. According to Mikolajczak (2009), emotional intelligence is best measured using a three-level model including knowledge, abilities, and dispositions (traits). Specifically, knowledge is the base level and underlies abilities (or skill), then skill underlies dispositions (Mikolajczak, 2009). Thus, since Basic Empathy Scale was only measured at baseline we do not know if there was any (positive or negative) intervention effect of the empathy-induce video.

The role of educational level on stigma attitudes is not clear. Some argued that people who completed more years of education are likely to have more knowledge about and/or experience with health-related conditions and hence, are less likely of stigma endorsement (Babalola, Fatusi, & Anyanti, 2009; Chiao, Mishra, & Sambisa, 2009; Corrigan & Watson, 2007; Girma et al., 2014; Stephenson, 2009). Some evidence suggests that very low level of education (e.g., illiterate) is associated with stigmatization toward people with HIV (Li et al., 2017); while the contrary has also been shown. That is, higher level of formal education was associated to higher levels of stigma (Masoudnia, 2015). Tsai and Venkataramani (2015) explored the association of increased formal schooling to lowered stigma. They concluded that, for young adults in Uganda, additional years of education in the formal schooling system did not have a causal effect on reducing negative attitudes toward persons with HIV (Tsai & Venkataramani, 2015). A

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possible explanation for these mixed findings could be that while higher levels of knowledge may reduce negative attitudes toward people with HIV, greater level of health consciousness may worsen it (Wang et al., 2013). An alternative explanation could be that people with higher education may foster more conservative attitudes. There is some evidence that religious participation can foster HIV/AIDS stigma (Varas-Díaz, Neilands, Malavé Rivera, & Betancourt, 2010; Zou et al. 2009). For example, it has been found that religious beliefs are related to the idea that the HIV infection is a punishment from God (Zou et al. 2009). To explore this relationship, a correlation between education level and attendance to religious services was conducted, yielding a significative positive correlation ($r = .198$, $p < 001$). Thus, another possible explanation may be that being more religious could influence levels of stigma. For exploratory purposes, education level was included in the regression; we found that having a Bachelor's degree or more was associated with significantly higher stigma.

Findings regarding HIV and age suggest that individuals 30 years of age or older score higher on HIV knowledge than those younger than 30, but this effect is not linear. In a study in India, Araujo (2008) found a non-linear relationship between age and HIV knowledge. Males and females between the ages of 20 and 40 appear to have more knowledge about AIDS than young males and females; the opposite is the case for males and females 40 years old or older. Similar non-linear trends were observed in a Chinese population (Chen et al 2005). Based on these findings, interventions to increase knowledge and reduce stigma should consider specific community characteristics, including age, but also HIV risk behavior.

Ultimately the results stress the needs for effective education with the intent to correct misinformation. According to Lewandowski et al. (2012), once an individual is misinformed about a topic, attempting to correct misinformation is extremely difficult and may even backfire, resulting in even stronger beliefs of misinformation. The researchers explain that individuals create a mental model of events and by retracting information, a gap is left in their model (Lewandowski et al., 2012). Rather than accepting new information, they rely on information they already believed (Lewandowski et al., 2012). It could be, for example, that participants heard about HIV/AIDS in the 1980s when those who contracted HIV were only aware of the virus after receiving an AIDS diagnosis and as a result lead people to believe HIV and AIDS are the same thing. By simply explaining that AIDS is the third and final stage of HIV, it may contradict what individuals understood about HIV/AIDS in the 1980s and create a "gap" in their mental model. Since the belief that HIV and AIDS are the same would explain the AIDS crisis in the 1980's, individuals may resist correct information. By following correct information with an explanation to fill possible gaps, individuals are more likely to accept the new, correct information (Lewandowski et al., 2012). The current findings reflect the suggestions made by Lewandowski et al. (2012), such that videos simply listing facts about HIV are met with resistance. Thus, strategies into educate the general public would be more effective if rather than listing facts, they explained the myth, address why the false information is considered believable, and offer a new explanation for correct information (Lewandowski et al., 2012).

The study has several limitations. First, data were collected cross-sectionally and was retrieved immediately before and immediately after the intervention; future studies

should test interventions to reduce stigma longitudinally to determine if stigma reduction remains long-term.

The empathy scale was only completed before the intervention. To analyze the effect of the emotional video on empathy and the role of empathy on stigma, it should have been completed both before and after the intervention.

The sample consisted of highly educated participants, 7.4% of whom resided outside the US. Cultural factors associated with country / place of residence could have influence our results. Over 80% of the sample had a bachelor's degree or more, thus the sample was more educated compared to the general population, which is consistent with the literature on Mturk samples (Goodman et al., 2013). However, the participants' performance on the HIV knowledge questionnaire was poor despite having higher education levels. In addition, other potential explanatory variables such as health consciousness were not collected.

Some items on the Social Desirability scale were omitted; this may have influenced the results since the scale was included as a covariate in the ANOVAs.

Sexual risk behavior and preconceptions about HIV/AIDS remain a significant problem due to a lack of knowledge in the general population (Holtgrave, McGuire, & Milan, 2007). High risk behavior such as multiple partners and low condom use is believe one of the major driver of the HIV epidemic (Holtgrave, et al., 2007). Another important driving factor is the stigma of people living with HIV which is considered a primary barrier to effective HIV prevention and treatment programs. In my study, the majority of the participants received some form of sex education from their parents (63.1%) and school (72.3%). Despite receiving formal sex education, less than half (44.3%) learned

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about condom use. Further, only about a fourth (26.9%) received information about STDs and how they are spread, treated, and detected. The poor quality of the sex education received is also reflected in the low scores obtained in the HIV Knowledge Questionnaire; on average, participants answered only about 50% of HIV knowledge items correctly scores similar to those obtained originally by Carey et al (1997) in community samples. Most HIV researchers identify knowledge (information) as an important determinant of risk behavior. Accordingly, most intervention programs provide information about HIV-related transmission and prevention to reduce the risk of infection. Findings indicate a need for more comprehensive HIV/AIDS education, particularly with regard to condom use and the benefits of routine STI/HIV testing. Further, it is essential that sex education be LGBT-inclusive since men who have sex with men account for over half of the population with HIV in US (UNAIDS, 2018). Although knowledge might not be sufficiently protective in and of itself, having accurate information about HIV may impact health-promoting behavior. According to Proulx et al. (2019), only 34.4% (range 16.2% to 57.1%) taught LGBT-inclusive sex education; students who had LGBT-inclusive sex education had positive mental health outcomes and safe sex practices. It may be beneficial for educational interventions to also be LGBT-inclusive, especially if they are intended to increase HIV knowledge, reduce stigma, or increase safe sex practices.

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APPENDIX A

TABLES OF RESULTS

Table 1. Characteristics of Study Participants

N = 377	n (%)
Age	
18 - 29	156 (41.3)
30 - 71	222 (58.6)
Gender	
Male	238 (63.1)
Female	139 (36.9)
Sexual Orientation	
Heterosexual	269 (71.4)
Homosexual	16 (4.2)
Bisexual	91 (24.0)
Education	
High school diploma	18 (4.8)
Some college	21 (5.6)
Associate's degree	18 (4.8)
Bachelor's degree	242 (64.2)
Master's degree	74 (19.6)

PhD / JD / MD	4 (1.1)

Marital Status

Married / partnership	246 (65.4)
Divorced, widowed	19 (5.1)
Single	111 (29.5)

Table 2. Independent *t-test* of HIV Knowledge and Stigma by Demographic Characteristics

	HIV Knowledge		*p* value	HIV Stigma		*p* value
	Mean (SD)			*Mean (SD)*		
Age	20.75	25.49	.001	3.14	2.70	.001
Less than	(6.80)	(8.72)		(0.76)	(0.94)	
30 vs >30						
Gender	22.25	25.75	.001	2.99	2.69	.002
Male vs.	(7.75)	(8.81)		(0.86)	(0.94)	
Female						
Education	22.60	28.56	.001	3.01	1.95	.001
BA vs. High	(8.08)	(10.59)		(0.83)	(0.70)	
School						
BA vs.	22.60	29.48	.001	3.01	1.78	.001
Some	(8.08)	(8.76)		(0.83)	(0.57)	
College						
BA vs.	22.60	26.44	.055	3.01	2.38	.001
Associate's	(8.08)	(9.19)		(0.83)	(0.81)	
< BA vs. BA	28.23	22.70	.001	2.02	3.03	.001
+	(9.42)	(7.82)		(0.73)	(0.84)	

Sexual Orientation Hetero vs. Bisexual	24.80 (8.76)	20.13 (5.80)	.001	2.68 (0.91)	3.43 (0.57)	.001
Hetero vs. Non-hetero	24.80 (8.76)	20.44 (6.09)	.001	2.68 (0.91)	3.37 (0.64)	.001

Table 3. Percentage of Items Answered Correctly by Education Level

		<BA	>BA
HIV and AIDS are the same thing.	F	77.2	37.8
There is a cure for AIDS.	F	64.9	51.9
A person can get HIV from a toilet seat.	F	78.9	56.7
Coughing and sneezing DO NOT spread HIV.	T	70.2	51.7
HIV can be spread by mosquitoes.	F	50.9	50.3
AIDS is the cause of HIV.	F	56.1	47.8
A person can get HIV by sharing a glass of water with someone who has HIV.	F	73.7	50.9
HIV is killed by bleach.	T	19.3	33.4
It is possible to get HIV when a person gets a tattoo.	T	62.5	61.6
A pregnant woman with HIV can give the virus to her unborn baby.	T	75.0	59.2
Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex.	F	78.9	48.3

A woman can get HIV if she has anal sex with a man.	T	73.2	54.2
Showering, or washing one's genitals/private parts, after sex keeps a person from getting HIV.	F	75.4	50.6
Eating healthy foods can keep a person from getting HIV.	F	80.7	57.6
All pregnant women infected with HIV will have babies born with AIDS.	F	57.1	46.4
Using a latex condom or rubber can lower a person's chance of getting HIV.	T	78.9	55.2
A person with HIV can look and feel healthy.	T	75.4	55.3
People who have been infected with HIV quickly show serious signs of being infected.	F	71.9	46.1
A person can be infected with HIV for 5 years or more without getting AIDS.	T	66.7	53.6
There is a vaccine that can stop adults from getting HIV.	F	50.9	45.9
Some drugs have been made for the treatment of AIDS.	T	68.4	56.0
Women are always tested for HIV during their pap smears.	F	50.9	41.7
A person CANNOT get HIV by having oral sex, mouth	F	66.7	49.8
A person can get HIV even if she or he has sex with another person one time.	T	71.9	56.7
Using a lamb skin condom or rubber is the best protection against HIV.	F	33.3	39.3

People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.	F	59.6	44.8
A person can get HIV by giving blood.	F	45.6	32.3
A woman cannot get HIV if she has sex during her period.	F	75.4	57.8
You can usually tell if someone has HIV by looking at them.	F	85.7	51.7
There is a female condom that can help decrease a woman's chance of getting HIV.	T	42.1	50.8
A natural skin condom works better against HIV than does a latex condom.	F	42.1	41.7
A person will NOT get HIV if she or he is taking antibiotics.	F	77.2	52.5
Having sex with more than one partner can increase a person's chance of being infected with HIV.	T	75.4	65.1
Taking a test for HIV one week after having sex will tell a person if she or he has HIV.	F	49.1	40.0
A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.	F	68.4	49.7
A person can get HIV through contact with saliva, tears, sweat, or urine.	F	52.6	48.6
A person can get HIV from a woman's vaginal secretions/wetness from her vagina.	T	40.4	52.5
A person can get HIV if having oral sex, mouth on vagina, with a woman.	T	54.4	46.4

If a person tests positive for HIV, then the test site will have to tell all of his or her partners.	F	38.6	40.2
Using Vaseline or baby oil with condoms lowers the chances of getting HIV.	F	70.2	51.4
Washing drug use equipment/ "works" with cold water kills HIV.	F	75.4	47.0
A woman can get HIV if she has vaginal sex with a man who has HIV.	T	78.9	57.0
Athletes who share needles when using steroids can get HIV from the needles.	T	71.9	63.2
Douching after sex will keep a woman from getting HIV.	F	77.2	54.7
Taking vitamins keeps a person from getting HIV.	F	84.2	52.2

Table 4. Means, standard deviation and F values of HIV knowledge and Stigma for Group (3 levels) by Time (2 levels pre and post-intervention)

		Pre-test		Post-test	
	N	Mean	SD	Mean	SD
HIV Knowledge					
Control group	119	24.05	9.27	25.20	9.32
Information only Group	133	22.94	7.56	23.41	8.67
Information & Empathy Group	126	23.67	8.12	23.66	8.95
Main effect time F (1, 375) = 3.85, *p* = .05, *η 2* = .01					
Main Effect group F (2, 375) = 1.00, *p* = .37, *η 2* = .01					
		Pre-test		Post-test	
	N	Mean	SD	Mean	SD
HIV Stigma					
Control group	119	2.78	0.89	2.83	0.83
Information only Group	133	2.96	0.90	2.96	0.83
Information & Empathy Group	126	2.88	0.90	2.96	0.84
Main effect time F (1, 375) = 4.83, *p* = .03, *η 2* = .01					

Table 5. Results of unadjusted and multivariate hierarchical linear regression of Post-Intervention HIV Stigma score on select predictor variables (N=293). Significant predictors are in bold.

Predictor	Unadjusted	Step 1	Step 2	Step 3	Step 4	Step 5
		Hierarchical Multivariate				
Age	**-0.357†**	**-0.281†**	-0.084	.017	-0.107	0.053
Gender - Male	**0.277‡**	0.039	-0.039	.034	-0.058	-0.011
Race - White	**-0.515†**	**-0.229‡**	**-0.164***	**.112‡**	-0.091	0.025
Education (BA+)	**1.002†**	**0.898†**	**0.531†**	**0.535†**	**0.436†**	**0.146***
Emotional Intelligence	**0.673†**		**0.626†**	**0.633†**	**0.538†**	**0.152‡**
Religious service attendance	**0.084‡**		0.030	0.031	**0.053***	0.020
Social Desirability	**-0.068†**		-0.008	-0.007	-0.004	0.007

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Southern States	-0.170			-0.005	-0.023	-0.015
US residence	-0.211			0.126	0.057	0.126
Condom use	**0.703†**				**0.225‡**	0.035
Heterosexual Orientation	**-0.571†**				**-0.262†**	0.020
HIV tested	-0.027					0.013
HIV Knowledge	**-0.063†**					-0.005
Stigma pre-intervention	**0.855†**					**0.716†**
Adjusted R²		.230	.489	.491	.531	.808
R² change			0.259	0.002	.040	.277

†p < .001; ‡p < .005; *p < .05.

Table 6. *Repeated Measures Analyses of Variance of Within-Subjects Effects for HIV Knowledge*

Effect	*MS*	df	F	p	η^2
Test	25.52	1	1.82	.178	.005
Test * Age	0.21	1	0.02	.902	.000

Test * Group	21.08	2	1.50	.224	.008
Error	14.02	374			

Table 7. *Repeated Measures Analyses of Variance of Between-Subjects Effects for HIV Knowledge*

Effect	*Mean Square*	df	F	p	η^2
Intercept	137663.68	1	1097.90	.000	.746
Age	3971.92	1	31.68	.000	.078
Group	75.14	2	0.60	.550	.003
Error	125.39	374			

Table 8. *Repeated Measures Analyses of Variance of Within-Subjects Effects for HIV Stigma*

Effect	*MS*	df	F	p	η^2
Test	0.17	1	2.66	.104	.007
Test * SDS	0.04	1	0.55	.459	.001
Test * Age	0.26	1	4.07	.044	.011
Test * Group	0.09	2	1.45	.235	.008
Error	0.06	373			

SDS – Social desirability

Table 9. *Repeated Measures Analyses of Variance of Between-Subjects Effects for HIV Stigma*

Effect	*Mean Square*	df	F	p	η^2
Intercept	401.06	1	315.01	.000	.458
SDS	36.11	1	28.36	.000	.071
Age	17.98	1	14.13	.000	.036

APPENDIX B

QUESTIONNAIRES

HIV Stigma Scale

1. Families of people with HIV/AIDS should be ashamed.

2. People living with HIV/AIDS should be ashamed.

3. People who HIV/AIDS are cursed.

4. People who have AIDS are disgusting.

5. People living with HIV/AIDS deserve to be punished.

6. Is it reasonable for an employer to fire people who have AIDS.

7. People with AIDS should be isolated from other people.

8. People with HIV should not have the same freedom as other people.

9. People living with HIV/AIDS in this community face rejection from their peers.

10. People who have HIV/AIDS in this community face verbal abuse or teasing.

11. People who have HIV/AIDS in this community face neglect from their family.

12. People who are suspected of having HIV/AIDS lose respect in the community.

13. People who have HIV/AIDS in this community face physical abuse.

14. Most people would not buy vegetables from a shopkeeper that they knew had
    AIDS.

15. People with AIDS should be treated similarly by health professionals as people
    with other illnesses.

16. People with HIV should be allowed to fully participate in social events in this
    community.

17. A person with AIDS should be allowed to work with other people.

18. People who have HIV/AIDS should be treated the same as everyone else.

1. HIV and AIDS are the same thing.

2. There is a cure for AIDS.

3. A person can get HIV from a toilet seat.

4. Coughing and sneezing DO NOT spread HIV.

5. HIV can be spread by mosquitoes.

6. AIDS is the cause of HIV.

7. A person can get HIV by sharing a glass of water with someone who has HIV.

8. HIV is killed by bleach.

9. It is possible to get HIV when a person gets a tattoo.

10. A pregnant woman with HIV can give the virus to her unborn baby.

11. Pulling out the penis before a man climaxes keeps a woman from getting HIV during sex.

12. A woman can get HIV if she has anal sex with a man.

13. Showering, or washing one's genitals after sex keeps a person from getting HIV.

14. Eating healthy foods can keep a person from getting HIV.

15. All pregnant women infected with HIV will have babies born with AIDS.

16. Using a latex condom or rubber can lower a person's chances of getting HIV.

17. A person with HIV can look and feel healthy.

18. People who have been infected with HIV quickly show serious signs of being infected.

19. A person can be infected with HIV for 5 years or more without getting AIDS.

20. There is a vaccine that can stop adults from getting HIV.

21. Some drugs have been made for the treatment of AIDS.

22. Women are always tested for HIV during their pap smears.

23. A person cannot get HIV by having oral sex, mouth-to-penis, with a man who has HIV.

24. A person can get HIV even if she or he has sex with another person only one time.

25. Using a lambskin condom or rubber is the best protection against HIV.

26. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.

27. A person can get HIV by giving blood.

28. A woman cannot get HIV if she has sex during her period.

29. You can usually tell if someone has HIV by looking at them.

30. There is a female condom that can help decrease a woman's chance of getting HIV.

31. A natural skin condom works better against HIV than does a latex condom.

32. A person will not get HIV if she or he is taking antibiotics.

33. Having sex with more than one partner can increase a person's chance of being infected with HIV.

34. Taking a test for HIV one week after having sex will tell a person if she or he has HIV.

35. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.

36. A person can get HIV through contact with saliva, tears, sweat, or urine.

37. A person can get HIV from a woman's vaginal secretions/wetness from her

vagina.

38. A person can get HIV if having oral sex, mouth on vagina, with a woman.

39. If a person tests positive for HIV, then the test site will have to tell all of his or her

partners.

40. Using Vaseline or baby oil with condoms lowers the chance of getting HIV.

41. Washing drug use equipment with cold water kills HIV.

42. A woman can get HIV if she has vaginal sex with a man who has HIV.

43. Athletes who share needles when using steroids can get HIV from the needles.

44. Douching after sex will keep a woman from getting HIV.

45. Taking vitamins keeps a person from getting HIV.

TEIQue-SF

1. Expressing my emotions with words is not a problem for me.

2. I often find it difficult to see things from another person's viewpoint.

3. On the whole, I'm a highly motivated person.

4. I usually find it difficult to regulate my emotions.

5. I generally don't find life enjoyable.

6. I can deal effectively with people.

7. I tend to change my mind frequently.

8. Many times, I can't figure out what emotion I'm feeling.

9. I feel that I have a number of good qualities.

10. I often find it difficult to stand up for my rights.

11. I'm usually able to influence the way other people feel.

12. On the whole, I have a gloomy perspective on most things.

13. Those close to me often complain that I don't treat them right.

14. I often find it difficult to adjust my life according to the circumstances.

15. On the whole, I am able to deal with stress.

16. I often find it difficult to show my affection to those close to me.

17. I'm normally able to "get into someone's shoes" and experience their emotions.

18. I normally find it difficult to keep myself motivated.

19. I'm usually able to find ways to control my emotions when I want to.

20. On the whole, I am pleased with my life.

21. I would describe myself as a good negotiator.

22. I tend to get involved in things I later wish I could get out of.

23. I often pause and think about my feelings.

24. I believe I am full of personal strengths.

25. I tend to "back down" even if I know I'm right.

26. I don't seem to have any power at all over other people's feelings.

27. I generally believe that things will work out fine in my life.

28. I find it difficult to bond well even with those close to me.

29. Generally, I am able to adapt to new environments.

30. Others admire me for being relaxed.

Items of the Basic Empathy Scale (20 items)

5-point Likert scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*)

1. My friends' emotions don't affect me much.

2. After being with a friend who is sad about something, I usually feel sad.

3. I can understand my friend's happiness when she/he does well at something.

4. I get frightened when I watch characters in a good scary movie.

5. I get caught up in other people's feelings easily.

6. I find it hard to know when my friends are frightened.

7. I don't become sad when I see other people crying.

8. Other people's feeling don't bother me at all.

9. When someone is feeling 'down' I can usually understand how they feel.

10. I can usually work out when my friends are scared.

11. I often become sad when watching sad things on TV or in films.

12. I can often understand how people are feeling even before they tell me.

13. Seeing a person who has been angered has no effect on my feelings.

14. I can usually work out when people are cheerful.

15. I tend to feel scared when I am with friends who are afraid.

16. I can usually realize quickly when a friend is angry.

17. I often get swept up in my friends' feelings.

18. My friend's unhappiness doesn't make me feel anything.

19. I am not usually aware of my friends' feelings.

20. I have trouble figuring out when my friends are happy.

Social Desirability Scale

1. Before voting I thoroughly investigate the qualifications of all the candidates.

2. I never hesitate to go out of my way to help someone in trouble.

3. It is sometimes hard for me to go on with my work if I am not encouraged.

4. I have never intensely disliked anyone.

5. On occasions I have had doubts about my ability to succeed in life.

6. I sometimes feel resentful when I don't get my way.

7. I am always careful about my manner of dress.

8. My table manners at home are as good as when I eat out at a restaurant.

9. If I could get into a movie without paying and be sure I was not seen, I would probably do it.

10. On a few occasions, I have given up something because I thought too little of my ability.

11. I like to gossip at times.

12. There have been times when I felt like rebelling against people in authority even though I knew they were right.

13. No matter who I'm talking to, I'm always a good listener.

14. I can remember "playing sick" to get out of something.

15. There have been occasions when I have taken advantage of someone.

16. I'm always willing to admit when I make a mistake.

17. I always try to practice what I preach.

18. I don't find it particularly difficult to get along with loudmouthed, obnoxious people.

19. I sometimes try to get even rather than forgive and forget.

20. When I don't know something, I don't mind admitting it.

21. I am always courteous, even to people who are disagreeable.

22. At times I have really insisted on having things my own way.

23. There have been occasions when I felt like smashing things.

24. I would never think of letting someone else be punished for my wrong doings.

25. I never resent being asked to return a favor.

26. I have never been irked when people expressed ideas very different from my own.

27. I never make a long trip without checking the safety of my car.

28. There have been times when I was quite jealous of the good fortune of others.

29. I have almost never felt the urge to tell someone off.

30. I am sometimes irritated by people who ask favors of me.

31. I have never felt that I was punished without cause.

32. I sometimes think when people have a misfortune, they only got what they
deserved.

33. I have never deliberately said something that hurt someone else's feelings.

APPENDIX C

IRB APPROVAL

EXEMPTION GRANTED

Perla Vargas
NCIAS: Social and Behavioral Sciences, School of (SSBS) 602/543-8224
Perla.Vargas@asu.edu

Dear Perla Vargas:
On 2/12/2020 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Development and testing of a psycho-educational video to improve HIV literacy among young adults.
Investigator:	Perla Vargas
IRB ID:	STUDY00011314
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Consent Sona Systems, Category: Consent Form; • Ek-krab Citi Certification, Category: Non-ASU human subjects training (if taken within last 3 years to grandfather in); • info only script, Category: Recruitment materials/advertisements /verbal scripts/phone scripts; • Informed Consent MTurk, Category: Consent Form; • IRB protocol, Category: IRB Protocol; • Qualtrics Survey mturk, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Qualtrics Survey Sona, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • stigma script, Category: Recruitment materials/advertisements /verbal scripts/phone scripts;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 on 2/12/2020.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Renee El-krab Renee El-krab